

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE HONORABLE BOARD OF PATENT APPEALS AND INTERFERENCES

In re the Application of

Timothy J. Fuller et al

Application No.: 10/808,679

Examiner: Amanda C. Walke

Filed: March 25, 2004

Docket No.: A1258-US-NP
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For: POLYMER PROCESSES

BRIEF ON APPEAL

Appeal from Group 1752

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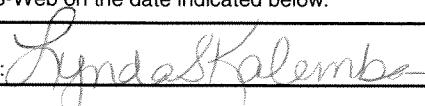
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I. REAL PARTY IN INTEREST

The real party in interest for this appeal and the present application is Xerox Corporation, by way of an Assignment recorded in the U.S. Patent and Trademark Office at Reel 015150, Frame 0944.

II. RELATED APPEALS AND INTERFERENCES

There are no prior or pending appeals, interferences or judicial proceedings, known to Appellant, Appellant's representative, or the Assignee, that may be related to, or which will directly affect or be directly affected by or have a bearing upon the Board's decision in the pending appeal.

III. STATUS OF CLAIMS

Claims 1, 5-16, and 20-32 are on appeal.

Claims 1, 5-16, and 20-32 are pending.

Claims 1, 5-16, and 20-32 are rejected.

Claims 2-4 and 17-19 are canceled.

IV. STATUS OF AMENDMENTS

An Amendment After Final Rejection was filed on March 26, 2007. In that Amendment, the claims were not amended. By an Advisory Action dated April 6, 2007, it was indicated that the Amendment had not been entered.

V. SUMMARY OF CLAIMED SUBJECT MATTER

The invention of independent claim 1 is directed to a process for preparing poly(vinylbenzyl alcohol) comprising: preparing a reaction mixture comprising poly(vinylbenzyl acetate), a basic catalyst, and pyridine; and hydrolyzing the poly(vinylbenzyl acetate) in the presence of the basic catalyst to form poly(vinylbenzyl alcohol). See page 2, lines 11-16; page 3, lines 9-14; page 6, lines 20-24.

The invention of independent claim 16 is directed to a process for preparing poly(vinylbenzyl alcohol) from poly(vinylbenzyl chloride) comprising: converting poly(vinylbenzyl chloride) to poly(vinylbenzyl acetate); preparing a reaction mixture comprising poly(vinylbenzyl acetate), a basic catalyst, and pyridine; and hydrolyzing the poly(vinylbenzyl acetate) in the presence of the basic catalyst to form poly(vinylbenzyl alcohol). See page 2, lines 11-16; page 3, lines 9-14; page 6, lines 20-24.

VI. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

The following grounds of rejection are presented for review:

Claims 1, 5-12, 16, 20-27, and 30-32 were rejected as allegedly being obvious under 35 U.S.C. §103(a) over U.S. Patent No. 6,200,716 to Fuller and U.S. Patent No. 6,251,313 to Deubzer.

Claims 1, 5-14, 16, 20-22, and 28-32 were rejected as allegedly being obvious under 35 U.S.C. §103(a) over Fuller and U.S. Patent No. 6,391,992 to Pinschmidt, Jr.

Claims 1, 5-12, 16, 20-22, and 30-32 were rejected as allegedly being obvious under 35 U.S.C. §103(a) over Fuller and U.S. Patent No. 5,710,211 to Sato.

VII. ARGUMENT

A. Grouping of Claims

Claims 1, 5-12, 31, and 32 stand or fall together with respect to the rejection over Fuller and Deubzer.

Claims 16 and 20-30 stand or fall together with respect to the rejection over Fuller and Deubzer.

Claims 1, 5-14, 31, and 32 stand or fall together with respect to the rejection over Fuller and Pinschmidt, Jr.

Claims 16, 20-22, and 30 stand or fall together with respect to the rejection over Fuller and Pinschmidt, Jr.

Claims 1, 5-12, 31, and 32 stand or fall together with respect to the rejection over Fuller and Sato.

Claims 16, 20-22, and 30 stand or fall together with respect to the rejection over Fuller and Sato.

B. The claims are not obvious over Fuller in view of Deubzer.

There is no motivation to modify Fuller so as to arrive at the claimed processes. Fuller discloses the use of borane-tetrahydrofuran (BTHF) complex as a catalyst. See Fuller, column 6, lines 27-30; Example 3. However, this catalyst is an acidic catalyst, not a basic catalyst as required by both instant claims 1 and 16. Acidic and basic catalysts require different reacting conditions to be successfully used. Therefore, there is no motivation to use a basic catalyst instead of an acidic catalyst.

The Examiner has consistently responded to this argument by stating that Fuller employs a catalyst known in the art to function in a hydrolysis reaction and is not limited thereto. See, e.g., paragraph 5 on page 9 of the Final Office Action of February 23, 2007. However, this interpretation fails to consider the references as a whole. In particular, the modification from acidic catalyst to basic catalyst is not one where one component is simply replaced. Instead, other changes are also needed. For example, the change in catalyst may require a change in the organic solvent used, the pH, the temperature, the running time, etc. If various well-known solvents, pHs, temperatures, running times, etc., must then be experimented with in order to support the initial modification, Applicants submit the motivation to modify is instead the “obvious to try” rationale warned against in *In re O’Farrell*, 853 F.2d 894, 7 USPQ2d 1673 (Fed. Cir. 1988), where all parameters must be varied to arrive at a successful result.

Applicants note that the recent decision in *KSR Intl. Co. v. Teleflex Inc.*, 127 S.Ct. 1727 (2007) has not changed the “obvious to try” test. The *KSR* court recognized that a combination may be obvious to try if it is one of a “finite number of identified, predictable solutions,” but that is not the case here. *KSR*, 127 S.Ct. at 1732. Neither Fuller nor the secondary references identify any predictable basic catalysts or solvents that are useful for catalyzing the formation of poly(vinylbenzyl alcohol) from poly(vinylbenzyl acetate). Thus, an “obvious to try” rationale is still improper here.

The Examiner also stated that the secondary references teach that it is conventional and advantageous for a basic catalyst to be included in such a reaction. This interpretation ignores the fact that Deubzer does not disclose conventional basic catalysts suitable for *any* hydrolysis reaction, but those suitable for his hydrolysis reaction only. As Deubzer is not making poly(vinyl benzyl alcohol), there is no reason

for one of ordinary skill in the art to look to Deubzer for other suitable catalysts with which to modify Fuller.

The Examiner also stated that one of ordinary skill in the art would have been motivated to add a basic catalyst to increase the yield of the desired product. However, this motivation goes towards the question of using a catalyst versus not using a catalyst. It does not go towards the question of *which* catalyst to use. Neither Fuller nor Deubzer state, for example, that a basic catalyst increases the yield of poly(vinyl benzyl alcohol) compared to the BTHF complex, or any other catalyst for that matter. Thus, this reasoning would not motivate one to modify Fuller by using a basic catalyst instead of the BTHF complex.

In addition, Fuller and Deubzer teach away from the claimed combination of a basic catalyst with pyridine. In particular, Deubzer explicitly teaches that his basic catalysts cannot be used with water-miscible solvents. See column 3, lines 55-65. The solvent recited in the instant claims, pyridine, is water-miscible. Fuller uses water, methanol, and THF as solvents: they are all water-miscible. Thus, Deubzer teaches away from the use of his basic catalysts in the reaction of Fuller. This argument has been made by Applicants in every amendment beginning with the Preliminary Amendment of August 22, 2006, but has never been responded to by the Examiner.

For at least these reasons, the rejection based on Fuller and Deubzer must be withdrawn.

C. The claims are not obvious over Fuller in view of Pinschmidt, Jr.

There is no motivation to modify the references. In particular, both Fuller and Pinschmidt, Jr. teach and suggest the use of an acid catalyst. As discussed above,

Fuller uses only an acid catalyst. Pinschmidt, Jr. teaches that his reaction proceeds best within a pH range of 3 to 7 (i.e. an acidic range), and at most 3.0 to 8.0. See col. 5, lines 50-65. Thus, the secondary reference (Pinschmidt, Jr.) does not teach that it would be useful to use a basic catalyst or that a basic catalyst would increase the yield of the desired product compared to an acid catalyst.

For at least these reasons, the rejection based on Fuller and Pinschmidt, Jr. must be withdrawn.

D. The claims are not obvious over Fuller in view of Sato.

There is no motivation to combine the references. The Examiner stated that it would have been obvious to use pyridine as a solvent for the reaction using a basic catalyst as taught by Fuller. See, e.g., paragraph 4 on page 8 of the Final Office Action of February 23, 2007. In the prior Office Action of October 18, 2005, the Examiner also stated that Sato was relied upon for its teaching of solvents suitable for use in similar reactions.

The stated motivations are incorrect. As discussed above, Fuller does not teach or suggest the use of a basic catalyst. In addition, Sato does not teach the use of pyridine as a solvent; he teaches the use of pyridine as a catalyst between two specific reactants. See column 4, lines 57-62 (listing solvents); column 5, lines 4-14 (listing pyridine as a reaction catalyst). Neither of Sato's reactants is similar to poly(vinylbenzyl acetate) and the Examiner has not shown where Fuller or Sato explains how a catalyst suitable for those reactants is suitable for poly(vinylbenzyl acetate). In addition, the recitation of pyridine as a catalyst would not suggest its use as a solvent to one of ordinary skill in the art. Indeed, the teaching of pyridine as a catalyst may teach away

from its use as a solvent to prevent unwanted or unexpected chemical reactions from occurring.

For at least these reasons, the rejection based on Fuller and Sato must be withdrawn.

CONCLUSION

For at least the reasons discussed above, it is respectfully submitted that the rejections are in error and that claims 1, 5-16, and 20-32 are in condition for allowance. Appellants respectfully request this Honorable Board to reverse the rejections of the claims.

Respectfully submitted,



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APPENDICES

VIII. CLAIMS APPENDIX:

Claims involved in the Appeal follow below:

1. (Previously Presented) A process for preparing poly(vinylbenzyl alcohol) comprising:

preparing a reaction mixture comprising poly(vinylbenzyl acetate), a basic catalyst, and pyridine; and

hydrolyzing the poly(vinylbenzyl acetate) in the presence of the basic catalyst to form poly(vinylbenzyl alcohol).

2. (Cancelled).

3. (Cancelled).

4. (Cancelled).

5. (Previously Presented) The process of claim 2, wherein the molar ratio of pyridine to poly(vinylbenzyl acetate) is from about 100:1 to about 4:1.

6. (Original) The process of claim 1, wherein the hydrolysis is conducted at a temperature of from about 40 °C to about 100 °C.

7. (Original) The process of claim 1, wherein the hydrolysis reaction time is from about 1 hour to about 6 hours.

8. (Original) The process of claim 1, wherein the basic catalyst is a quaternary ammonium salt.

9. (Original) The process of claim 8, wherein the quaternary ammonium salt is a tetraalkylammonium hydroxide, wherein optionally the alkyl is linear or branched with from 1 to about 20 carbon atoms.

10. (Original) The process of claim 9, wherein the tetraalkylammonium hydroxide is tetrabutylammonium hydroxide.

11. (Original) The process of claim 8, wherein the quaternary ammonium salt is an aralkyltrialkylammonium hydroxide, wherein optionally the aralkyl is a benzyl and the alkyl is linear or branched with from 1 to about 20 carbon atoms.

12. (Original) The process of claim 11, wherein the aralkyltrialkylammonium hydroxide is benzyltrimethylammonium hydroxide.

13. (Original) The process of claim 1, wherein the basic catalyst is a metal alkoxide, wherein optionally the metal is an alkali and the alkyl group is linear or branched with from 1 to about 20 carbon atoms.

14. (Original) The process of claim 13, wherein the metal alkoxide is sodium methoxide.

15. (Original) The process of claim 1, further comprising cooling the reaction mixture comprising the hydrolyzed poly(vinylbenzyl acetate) to a temperature of from about 10 °C to about 30 °C, adding water to precipitate the poly(vinylbenzyl alcohol) and recovering the poly(vinylbenzyl alcohol).

16. (Previously Presented) A process for preparing poly(vinylbenzyl alcohol) from poly(vinylbenzyl chloride), comprising:

converting poly(vinylbenzyl chloride) to poly(vinylbenzyl acetate);
preparing a reaction mixture comprising poly(vinylbenzyl acetate), a basic catalyst, and pyridine;
and hydrolyzing the poly(vinylbenzyl acetate) in the presence of the basic catalyst to form poly(vinylbenzyl alcohol).

17. (Cancelled).

18. (Cancelled).

19. (Cancelled).

20. (Previously Presented) The process of claim 17, wherein the molar ratio of pyridine to the poly(vinylbenzyl acetate) is from about 100:1 to about 4:1.

21. (Original) The process of claim 16, wherein the hydrolysis is conducted at a temperature of from about 40 °C to about 100 °C.

22. (Original) The process of claim 16, wherein the hydrolysis reaction time is from about 1 hour to about 6 hours.

23. (Original) The process of claim 16, wherein the basic catalyst is a quaternary ammonium salt.

24. (Original) The process of claim 23, wherein the quaternary ammonium salt is a tetraalkylammonium hydroxide, wherein optionally the alkyl is linear or branched with from 1 to about 20 carbon atoms.

25. (Original) The process of claim 24, wherein the tetraalkylammonium hydroxide is tetrabutylammonium hydroxide.

26. (Original) The process of claim 23, wherein the quaternary ammonium salt is an aralkyltrialkylammonium hydroxide, wherein optionally the aralkyl is a benzyl and the alkyl is linear or branched with from about 1 to about 20 carbon atoms.

27. (Original) The process of claim 26, wherein the aralkyltrialkylammonium hydroxide is benzyltrimethylammonium hydroxide.

28. (Original) The process of claim 16, wherein the basic catalyst is a metal alkoxide, wherein optionally the metal is an alkali and the alkyl group is linear or branched with from 1 to about 20 carbon atoms.

29. (Original) The process of claim 28, wherein the metal alkoxide is sodium methoxide.

30. (Original) The process of claim 16, further comprising cooling the reaction mixture comprising the hydrolyzed poly(vinylbenzyl acetate) to a temperature from about 10 °C to about 30 °C, adding water to precipitate the poly(vinylbenzyl alcohol) and recovering the poly(vinylbenzyl alcohol).

31. (Original) Poly(vinylbenzyl alcohol) made by the process of claim 1.

32. (Original) An imaging member containing a charge blocking layer comprising poly(vinylbenzyl alcohol) generated by the process of claim 1.

IX. EVIDENCE APPENDIX

NONE

X. RELATED PROCEEDINGS APPENDIX

NONE